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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/913,600	08/16/2001	Keiichi Kitagawa	L9289.01173	3776
24257	7590	11/24/2004	EXAMINER	
STEVENS DAVIS MILLER & MOSHER, LLP			GOSHTASBI, JAMSHID	
1615 L STREET, NW			ART UNIT	
SUITE 850			PAPER NUMBER	
WASHINGTON, DC 20036			2637	

DATE MAILED: 11/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/913,600	KITAGAWA, KEIICHI	
	Examiner	Art Unit	
	Jamshid Goshtasbi-G.	2637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 August 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>08/16/2001</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-8 are pending in the application.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1 and 8 are rejected under 35 U.S.C 102(b) as being anticipated by J. H. Yoo et al. (ISCAS'95, vol. 2, 28 April – 3 May 1995, pp.1090-1093, IEEE).

As to **Claim 1**, J. H. Yoo et al. discloses an impulse response (of the acoustic echo path, p. 1091; Fig. 3) estimation device (a transversal filter structure appended to a lattice filter structure, Fig.2) comprising a Lattice filter for generating a backward prediction error sequence (Eq. 6) and a backward reflection coefficient (p. 1090, right col., last paragraph) from an input signal sequence (AR 10 process; p. 1091, right col., last paragraph); calculation means (a commercially available DSP, p. 1090, right col., first paragraph) for calculating a tap coefficient and the backward prediction by means of a reference signal error sequence; and generation means (DSP) for generation [of] a tap coefficient applicable to a transversal type filter (p. 1090, right col., second paragraph – p. 1091, left paragraph, first paragraph) by means of a matrix operation (Eq. 7)

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using the transformation matrix (Eq. 8), which is generated by means of the backward reflection coefficient, and the tap coefficient (p. 1091, right col., first paragraph).

As to **Claim 8**, all recited features of the claimed channel estimation method correspond with (and are similarly as) subject matter mentioned in the rejection of Claim 1 above, applicable hereto.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over J. H. Yoo et al. (ISCAS'95, vol. 2, 28 April – 3 May 1995, pp.1090-1093, IEEE) in view of Lester et al. (US 5353307).

As to **Claims 2, 3, and 4**, J. H. Yoo et al. is silent about either a maximum likelihood sequence estimation type equalizer, a decision feedback equalizer, or a synchronous establishment device, being equipped with the impulse response estimation device. In disclosing an automatic simulcast alignment in a simulcast receiver, however, Lester et al. teaches the need of using an estimate of the channel impulse response by an equalizer (col. 4, line 39 and line 55) in a mobile simulcast receiver and for establishing synchronization (col. 4, lines 37-40); and

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that equalizer types suitable for implementing the equalizer are the Decision Feedback Equalizer and an equalizer based on a (MLSE) Maximum Likelihood Sequence Estimator (col. 5, lines 12-15). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Lester et al. into the method of J. H. Yoo et al. for producing the claimed invention because it provides for employing the cascaded lattice/transversal filter based impulse response estimator in either a DFE equalizer, a MLSE based equalizer, or a synchronous establishment devise for achieving fast convergence and reduced number of needed tap coefficients.

4. Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over J. H. Yoo et al. (ISCAS'95, vol. 2, 28 April – 3 May 1995, pp.1090-1093, IEEE) in view of Lester et al. (US 5353307) as applied to claims 1-4 above, and further in view of Vatalaro et al. (US 6336041 B1).

As to **Claim 5**, both J. H. Yoo et al. and Lester et al. are silent about a communication apparatus using a result of an estimation of a propagation path by said impulse response estimation device to equalization processing at reception or inverse equalization processing at transmission.

In disclosing a system for equalization and precompensation for TDMA communication (Fig. 1), however, Vatalaro et al. teaches that in the base station, the signal to be transmitted is precompensated (col. 4, lines 1-6), based on the channel estimate (col. 5, lines 7-8), where the precompensation must basically approximate the inverse of the transmission channel transfer function (col. 5,

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lines 11); further, the equalizer's parameters of the equalization system (EQS, Fig. 5) that is used to reconstruct the received signal, can be directly used to realize the precompensation system (col. 5, lines 19-25).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Vatalaro et al. into the method of J. H. Yoo et al. (in view of Lester et al.) for producing the claimed invention because it provides for employing the any of the equalizers equipped with the channel impulse response estimator (mentioned in the rejection of claims 1-4 above) to provide input (equalizer's parameters) for the implementation of the inverse equalization procession (precompensation) at transmission.

As to **claims 6 and 7**, the claimed communication terminal apparatus and base station apparatus correspond with subject matter mentioned in the rejection of claims 1 and 8 above, similarly applicable hereto.

Other prior art cited

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Rice et al. (US 5519735) discloses reconstructing a primary signal from many secondary signals that include a Lattice/adaptive filter cascade.

Critchlow et al. (US 5659576) discloses a balanced processing based on receiver selection that teaches MLSE based equalizer and channel impulse response estimation.

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Lindoff (US 6628706 B1) discloses a method and apparatus for transforming a channel estimate.

Marchetto et al. (US 5513215) discloses a thigh speed simulcast system using adaptive compensation.

Contact information

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jamshid Goshtasbi-G., whose telephone number is (571) 272-3012. The examiner can normally be reached on M-F 8:00/4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel, can be reached on (571) 272-2988. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Jamshid Goshtasbi-G.
Examiner
Art Unit 2637


JEAN B. CORRIELUS
PRIMARY EXAMINER

11-10-04